CLAIMS

What is claimed is:

1. A method of screening for a modulator of cell adhesion comprising the steps of:

   (a) contacting a first fibroblast cell with a suspected modulator of cell adhesion and a biologically effective amount of an ECM signaling molecule-related biomaterial selected from the group consisting of a human Cyr61, a human Cyr61 fragment, a human Cyr61 analog, and a human Cyr61 derivative;

   (b) separately contacting a second fibroblast cell with a biologically effective amount of an ECM signaling molecule-related biomaterial selected from the group consisting of a human Cyr61, a human Cyr61 fragment, a human Cyr61 analog, and a human Cyr61 derivative, thereby providing a control;

   (c) measuring the level of cell adhesion resulting from step (a) and from step (b); and

   (d) comparing the levels of cell adhesion measured in step (c), whereby a modulator of cell adhesion is identified by its ability to alter the level of cell adhesion when compared to the control of step (b).

2. The method according to claim 1 wherein said first and second fibroblast cells comprise an $\alpha_6\beta_1$ integrin.

3. The method according to claim 1 wherein said first and second fibroblast cells each comprise a heparan sulfate sulfated proteoglycan.

4. A method of screening for a modulator of cell migration comprising the steps of:

(a) forming a gel matrix comprising Cyr61 and a suspected modulator of cell migration;

(b) preparing a control gel matrix comprising Cyr61;

(c) seeding fibroblast cells presenting an $\alpha_6\beta_1$ integrin onto the gel matrix of step (a) and the control gel matrix of step (b);

(d) incubating said fibroblast cells;

(e) measuring the levels of cell migration by inspecting the interior of said gel matrix and said control gel matrix for cells;

(f) comparing the levels of cell migration measured in step (e), whereby a modulator of cell migration is identified by its ability to alter the level of cell migration in the gel matrix when compared to the level of cell migration in the control gel matrix.

5. The method according to claim 4 wherein said first and second fibroblast cells comprise an $\alpha_6\beta_1$ integrin.

6. The method according to claim 4 wherein said first and second fibroblast cells comprise a heparan sulfate proteoglycan.

7. The method according to claim 4 wherein said fibroblast cells are human cells.

8. The method according to claim 4 wherein said matrix is selected from the group consisting of Matrigel, collagen, and fibrin.

9. A method of screening for a modulator of fibroblast cell proliferation comprising the steps of:

(a) contacting a first fibroblast cell presenting an $\alpha_6\beta_1$ integrin with a suspected modulator and a biologically effective amount of an ECM signaling molecule-related biomaterial selected from the group consisting of a human Cyr61, a human Cyr61 fragment, a human Cyr61 analog, and a human Cyr61 derivative;

(b) separately contacting a second fibroblast cell presenting an $\alpha_6\beta_1$ integrin with a biologically effective amount of an ECM signaling molecule-related biomaterial selected from the group consisting of a human Cyr61, a human Cyr61 fragment, a human Cyr61 analog, and a human Cyr61 derivative, thereby providing a control;

(c) incubating said first and second fibroblast cells;

(d) measuring the level of cell proliferation resulting from step (c); and

(e) comparing the levels of cell proliferation measured in step (d), whereby a modulator of cell proliferation is identified by its ability to alter the level of cell proliferation when compared to the control of step (b).

10. The method according to claim 9 wherein said first and second fibroblast cells comprise an $\alpha_6\beta_1$ integrin.

11. The method according to claim 9 wherein said first and second fibroblast cells comprise a heparan sulfate proteoglycan.

12. A method of screening for a modulator of angiogenesis comprising the steps of:

(a) contacting a first endothelial cell comprising a *cyr*61 allele with a suspected modulator of angiogenesis;

(b) measuring the Cyr61 activity of the first endothelial cell;

(c) measuring the Cyr61 activity of a second endothelial cell comprising a *cyr*61 allele; and

(d) comparing the levels of Cyr61 activity measured in steps (b) and (c), thereby identifying a modulator of angiogenesis.

13. A method of screening for a modulator of angiogenesis comprising the steps of:

(a) contacting a first endothelial cell with a polypeptide selected from the group consisting of a Cyr61, a Fisp12, a CTGF, a NOV, an ELM-1 (WISP-1), a WISP-3, a COP-1 (WISP-2), and fragments, analogs, and derivatives of any of the aforementioned members of the CCN family of proteins;

(b) further contacting the first endothelial cell with a suspected modulator of angiogenesis;

(c) contacting a second endothelial cell with the polypeptide of step (a);

(d) measuring the angiogenesis of the first endothelial cell;

(e) measuring the angiogenesis of the second endothelial cell; and

(f) comparing the levels of angiogenesis measured in steps (d) and (e), thereby identifying a modulator of angiogenesis.

14. A method of screening for modulators of angiogenesis comprising the steps of:

(a) constructing a transgenic animal comprising a mutant allele of a gene encoding a polypeptide selected from the group consisting of a Cyr61, a Fisp12, a CTGF, a NOV, an ELM-1 (WISP-1), a WISP-3, a COP-1 (WISP-2);

(b) contacting the transgenic animal with a suspected modulator of angiogenesis;

(c) further contacting a wild-type animal with said polypeptide, thereby providing a control;

(d) measuring the levels of angiogenesis in the transgenic animal;

(e) measuring the level of angiogenesis of the wild-type animal; and

(f) comparing the levels of angiogenesis measured in steps (d) and (e), thereby identifying a modulator of angiogenesis.

15. A method of screening for modulators of wound healing comprising the steps of:

(a) contacting a first activated platelet with a polypeptide of the CCN family, such as Cyr61, and a suspected modulator;

(b) further contacting a second activated platelet with the polypeptide of step (a);

(c) measuring the binding of the first activated platelet to the polypeptide;

(d) measuring the binding of the second activated platelet to the polypeptide; and

(e) comparing the binding measurements of steps (d) and (e), thereby identifying a modulator of wound healing.

16. The method according to claim 15 wherein the platelets present the $\alpha_{IIb}\beta_3$ integrin.

17. A method of screening for modulators of macrophage adhesion comprising the steps of:

(a) contacting a first macrophage with a Cyr61 and a suspected modulator;

(b) further contacting a second macrophage with said polypeptide of step (a);

(c) measuring the binding of the first macrophage to said polypeptide;

(d) measuring the binding of the second macrophage to said polypeptide; and

(e) comparing the binding measurements of steps (d) and (e), thereby identifying a modulator of macrophage adhesion.

18. A mammalian cell comprising a *cyr*61 mutation selected from the group consisting of an insertional inactivation of a *cyr*61 allele and a deletion of a portion of a *cyr*61 allele.

19. The cell according to claim 18 wherein said mutation is a homozygous mutation.

20. The cell according to claim 18 wherein said mutation is in the coding region of *cyr*61.

21. The cell according to claim 18 wherein said cell is associated with an organism.

22. The cell according to claim 18 wherein said cell is human.

23. The cell according to claim 18 wherein said cell is a fibroblast.